

1600

RAW SEQUENCE LISTING DATE: 10/22/2001
PATENT APPLICATION: US/09/545,199D TIME: 16:53:01

Input Set : A:\6227.txt
Output Set: N:\CRF3\10222001\I545199D.raw

3 <110> APPLICANT: Lowery E., David
4 Fuller E., Troy
5 Kennedy J., Michael
Co
7 <120> TITLE OF INVENTION: Anti-Bacterial Vaccine Compositions
9 <130> FILE REFERENCE: 28341/6227.1
11 <140> CURRENT APPLICATION NUMBER: 09/545,199D
12 <141> CURRENT FILING DATE: 2000-04-06
14 <150> PRIOR APPLICATION NUMBER: 60/153,453
15 <151> PRIOR FILING DATE: 1999-09-10
17 <150> PRIOR APPLICATION NUMBER: 60/128,689
18 <151> PRIOR FILING DATE: 1999-04-09
20 <160> NUMBER OF SEQ ID NOS: 169
22 <170> SOFTWARE: PatentIn Ver. 2.0

Does Not Comply
Corrected Diskette Needed

ERRORED SEQUENCES

1992 <210> SEQ ID NO: 16
1993 <211> LENGTH: 2110
1994 <212> TYPE: PRT
1995 <213> ORGANISM: *Pasteurella multocida*
1997 <400> SEQUENCE: 16
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1999 1 5 10 15
2001 Gln Glu Asn Gly Leu Phe His Thr Leu Gly Asn Met Met Leu Glu Ala
2002 20 25 30
2004 Glu Arg Ser Val Tyr Asn Ile Gly Asp Ile Tyr Ala Ser Lys Lys Leu
2005 35 40 45
2007 Thr Val His Thr His Asn Leu Ile Asn Asp Val Arg Leu Ser Gly Asn
2008 50 55 60
2010 Val Ser Tyr Lys Pro Ile Gly Ser Ser Arg Asp Tyr Asp Ile Ser Arg
2011 65 70 75 80
2013 Val Ala Val His Gly Trp His Asn Asn Val Tyr Lys Leu Asn Leu Asn
2014 85 90 95
2016 Leu Gln Glu Gln Asp Lys Thr Asp Ile Lys Val Val Lys Met Gly Ala
2017 100 105 110
2019 Ile Arg Ser Asp Gly Asp Phe Asp Phe Lys Gly Ile Lys Ala Thr Ser
2020 115 120 125
2022 Ser Glu Ser Lys Pro Gln Leu Ile Asn His Gly Leu Ile Asn Val Lys
2023 130 135 140
2026 Gly Thr Phe Asn Ala Glu Ala Asp Gln Val Val Asn Gln Met Lys Ala
2027 145 150 155 160
2029 Phe Asn Gln Asn Ala Leu Ala Ser Val Phe Lys Asn Pro Ala Lys Ile
2030 165 170 175
2032 Thr Met Tyr Tyr Gln Pro Leu Thr Arg Tyr Ile Trp Thr Pro Leu Ser
2033 180 185 190
2035 Gly Asn Ala Ser Arg Glu Phe Asn Asn Leu Glu Ser Phe Leu Asp Ala

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2036	195	200	205	
2038	Leu Phe Gly Ser Thr Thr Ile Leu Lys Ser Ser Phe Tyr Ser Thr Glu			
2039	210	215	220	
2041	Asn Phe Ser Ala Tyr Gln Leu Leu Ser His Ile Gln His Ser Pro Met			
2042	225	230	235	240
2044	Tyr Gln Lys Ala Met Ala Gln Val Phe Gly Ala Glu Trp His Ser Lys			
2045	245	250	255	
2047	Ser Tyr Asp Glu Met Arg Asn Lys Trp Lys Ser Phe Lys Glu Asn Pro			
2048	260	265	270	
2050	Thr Asp Phe Ile Tyr Tyr Pro Ser Glu Lys Ala Lys Ile Leu Ala Gly			
2051	275	280	285	
2053	Lys Leu Glu Gly Lys Leu Thr Thr Leu Gln Asn Gly Glu Tyr Ala Glu			
2054	290	295	300	
2056	Arg Gly Lys Phe Asp Glu Ser Ile Gln Ile Gly Lys His Gln Leu Ser			
2057	305	310	315	320
2059	Leu Pro Ser Val Glu Leu Lys Ala Glu Phe Ser Asp Lys Glu Arg Leu			
2060	325	330	335	
2062	Glu Glu Asp Gly Val Asp Leu Ser Ser Ile Ala Glu Leu Leu Glu Met			
2063	340	345	350	
2065	Pro Asn Leu Phe Ile Asp Asn Ser Ile Gln Leu Glu Lys Lys Lys Leu			
2066	355	360	365	
2068	Ser Pro Ile Glu Asp Leu Asp Glu Glu Pro Arg Lys Asn Leu Asp Ile			
2069	370	375	380	
2071	Glu Glu Ser His Ser Asn Ser Ser Asp Asp Val Leu Ser Met Asn Asp			
2072	385	390	395	400
2074	Asp Glu Ser Asp Thr Asp Asp Ser Lys Trp Ser Met Gly Asn Asp Glu			
2075	405	410	415	
2077	Lys Glu Met Pro Asp Asp Lys Leu Gly Ile Ser Arg Asp Asp Arg Gly			
2078	420	425	430	
2080	Asn Lys Pro Pro Arg Thr Asp Pro Thr Val Asp Tyr Leu Asn Pro Asp			
2081	435	440	445	
2083	Glu Phe Phe Glu Asn Gly Tyr Leu Leu Asn Glu Leu Leu Gln Glu Leu			
2084	450	455	460	
2087	Gly Glu Glu Pro Leu Leu Lys Glu Gly Glu Asp His Phe Lys Arg Ser			
2088	465	470	475	480
2090	Thr Asn Leu Val Arg Leu Gly Glu Arg Asp Arg Gln Asn Arg Glu Lys			
2091	485	490	495	
2093	Arg Glu Lys Glu Gly Tyr Phe Asp Leu Pro Gly Thr Leu Asp Met Lys			
2094	500	505	510	
2096	Leu Gln Glu Leu Phe Glu Lys Arg Lys Gln Lys His Glu Ala Glu Gln			
2097	515	520	525	
2099	Lys Ala Arg Ile Glu Lys Ala Leu Leu Gln Lys Ser Glu Gln Gln Glu			
2100	530	535	540	
2102	Lys Arg Val Glu Glu Arg Lys Gln Glu Glu Lys Arg Gln Ala Gln Asp			
2103	545	550	555	560
2105	Lys Ile Ala Lys Gln Val Glu Ile Ala Lys Glu Met Gln Arg Val Glu			
2106	565	570	575	
2108	Glu Ile Arg Gln Arg Glu Lys Gln Leu Ala Ile Gln Leu Gln Glu Glu			
2109	580	585	590	

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2111 Glu Lys Lys Gln Gln Glu Lys His Leu Ser Glu Glu Lys Lys Gln
2112 595 600 605
2114 Ala Glu Gln Lys Gln Lys Ala Glu Glu Lys Val Ala Gln Glu Arg Leu
2115 610 615 620
2117 Asp Ile Glu Gln Gln Lys Ala Tyr Glu Glu Met Ala Lys Arg Glu Ala
2118 625 630 635 640
2120 Glu Ala Ser Lys Asn Val Leu Leu Lys Ala Ile Asp Glu Glu Arg Pro
2121 645 650 655
2123 Lys Val Glu Thr Asp Pro Leu Phe Arg Thr Lys Leu Lys Tyr Ile Asn
2124 660 665 670
2126 Gln Asp Asp Tyr Ala Gly Ala Asn Tyr Phe Phe Asn Lys Val Gly Leu
2127 675 680 685
2129 Asn Thr Lys Gly His Gln Lys Val Asn Val Leu Gly Asp Asn Tyr Phe
2130 690 695 700
2132 Asp His Gln Val Ile Thr Arg Ser Ile Glu Lys Lys Val Asp Asn His
2133 705 710 715 720
2135 Leu Asn Gln Lys Tyr Asn Leu Ser Asp Val Glu Leu Val Lys Gln Leu
2136 725 730 735
2138 Met Asp Asn Ser Thr Thr Gln Ala Gln Glu Leu Asp Leu Lys Leu Gly
2139 740 745 750
2141 Ala Ala Leu Thr Lys Glu Gln Gln Ala Asn Leu Thr Gln Asp Ile Val
2142 755 760 765
2144 Trp Tyr Val Lys Thr Lys Val Lys Gly Lys Asp Val Phe Val Pro Lys
2145 770 775 780
2148 Val Tyr Phe Ala Ser Glu Thr Leu Val Glu Ala Gln Lys Leu Gln Gly
2149 785 790 795 800
2151 Leu Gly Thr Gly Thr Ile Arg Val Gly Glu Ala Lys Ile Lys Ala Lys
2152 805 810 815
2154 Asp Val Val Asn Thr Gly Thr Leu Ala Gly Arg Lys Leu Asn Val Glu
2155 820 825 830
2157 Ala Ser Asn Lys Ile Lys Asn Gln Gly Ser Ile Leu Ser Thr Gln Glu
2158 835 840 845
2160 Thr Arg Leu Val Gly Arg Lys Gly Ile Glu Asn Val Ser Arg Ser Phe
2161 850 855 860
2163 Ala Asn Asp Glu Leu Gly Val Thr Ala Gln Arg Ser Glu Ile Lys Thr
2164 865 870 875 880
2166 Glu Gly His Leu His Leu Glu Thr Asp Lys Asp Ser Thr Ile Asp Val
2167 885 890 895
2169 Gln Ala Ser Asp Ile Lys Ala Lys Thr Ser Phe Val Lys Thr Gly Asp
2170 900 905 910
2172 Val Asn Leu Lys Asn Thr Tyr Asn Thr Lys His Ala Tyr Arg Glu Lys
2173 915 920 925
2175 Phe Ser Pro Ser Ala Leu Gln Val Ala Glu Leu Asp Val Ala Gly Leu
2176 930 935 940
2178 Lys Val Pro Leu Leu Gly Val Ser Ser Pro Ser Ser Tyr Ser Glu His
2179 945 950 955 960
2181 Thr Ser Glu Ala Thr Ser Glu Gly Ser Ile Phe Glu Val Gly His Leu
2182 965 970 975
2184 His Leu Ala Val Asp Arg Asp Val Asn Gln Ala Gly Ser Ile Lys

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2185	980	985	990	
2187	Ala Lys Tyr Thr Thr Gly Val Val Lys Gly Asn Phe Asn Thr Glu Ala			
2188	995	1000	1005	
2190	Gly Lys Asn Ile Lys His Val Glu Lys Glu Glu Tyr Ser Ser Gln Leu			
2191	1010	1015	1020	
2193	Phe Ala Ser Ala His Ala Ser Gly Gly Thr Ser Val Arg Tyr Asp			
2194	1025	1030	1035	1040
2196	Tyr Asn Ser Gln Asp Gly Gly Asn Ala Ser Val Gly Val Pro Thr Asn			
2197	1045	1050	1055	
2199	His Thr Gly Val Gly Ala Glu Ala Gly Met Ser Phe Thr His Thr Lys			
2200	1060	1065	1070	
2202	Asp Lys Glu Thr Leu Leu Thr His Thr Asn Ser Glu Leu Gln Val Lys			
2203	1075	1080	1085	
2205	His Gly Lys Leu His Val Leu Gly Tyr Ala Asp Ile Gly Gly Val Asp			
2206	1090	1095	1100	
2209	Ile Asn Thr Lys Leu Pro Glu Asp Ala Gln Ser Lys Ala Gln Lys Glu			
2210	1105	1110	1115	1120
2212	Ile Ala Ala Ser Lys Pro Glu Lys Thr Glu Gln Ser Ala Gln Asp Val			
2213	1125	1130	1135	
2215	Ala Gln Ala Gln Ser Asn Ala Asn Lys Asp Lys Glu Asn Lys Ala Pro			
2216	1140	1145	1150	
2218	Glu Ile Lys Glu Leu Ser Glu Ala Glu Ile Ala Asp Leu Met Ser Glu			
2219	1155	1160	1165	
2221	Lys Ser Lys Ala Tyr Phe Asp Asp Phe Ala Glu Gln Ala Lys Lys Ala			
2222	1170	1175	1180	
2224	Pro Glu Asn Asn Arg Phe Glu Leu Ser Ala Lys Glu Ile Lys Ser Ser			
2225	1185	1190	1195	1200
2227	Lys Gln Lys Asp Gln Tyr Asp His Glu Ser Glu Arg Thr Thr Phe Lys			
2228	1205	1210	1215	
2231	Val Gly Pro Glu Ala Glu Ala His Ser Ala Val Ala Asp Met Val Ser			
2232	1220	1225	1230	
2234	His Leu Val Lys Glu Tyr Arg Asp Ala Gln Asn Gly Thr Lys Gln Asp			
2235	1235	1240	1245	
2237	Gly Thr Val Ala Leu Gln His Ala Ser Asp Val Leu Asn Ile Val Thr			
2238	1250	1255	1260	
2240	Gly Asp Leu Ala Gly Ser Ser Ala Lys Leu Ser Val Glu Arg Thr His			
2241	1265	1270	1275	1280
2243	Glu Thr Lys Arg Thr Thr Glu Thr Gly Asp Ile Val Thr Lys Ile Gly			
2244	1285	1290	1295	
2246	Gly Asn Val Thr Leu Ser Ala Arg Ser Gly Ser Val Asn Leu Lys Asn			
2247	1300	1305	1310	
2249	Val Gln Ser Asp Glu Gln Ala Asn Leu Thr Leu Arg Ala Lys Glu Asp			
2250	1315	1320	1325	
2252	Val Asn Val Leu Ser Gly Glu Lys Thr Arg Glu Thr Thr Glu Thr Val			
2253	1330	1335	1340	
2255	Ser Arg Gln Lys Leu Ser His Gly Val Asn Ala Gly Cys Ser Met Met			
2256	1345	1350	1355	1360
2258	Ser Gly Ala Cys Thr Ala Gly Val Ser Thr Ser Leu Glu Gly Asn Glu			
2259	1365	1370	1375	

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2261 Ser Tyr Thr Ser Glu Arg Glu Thr Ala Gln Asn Asn Ser Phe Leu Lys
 2262 1380 1385 1390
 2264 Ala Arg Asn Met Lys Val Glu Ala Gly Arg Asp Phe Asn Val Val Ser
 2265 1395 1400 1405
 2267 Ser Asn Ile Asp Ala Asp Lys Leu Asp Leu His Val Lys Gly Lys Thr
 E--> 2268 <1410 1415 1420
 2270 Asn Val Val Ser Lys Gln Asp Thr Leu Gln Lys Val Thr His Gly Val
 2271 1425 1430 1435 1440
 2273 Asp Tyr Asn Leu Ser Ala Gly Val Ala Leu Ser Ser Ala Thr Ile Ala
 2274 1445 1450 1455
 2276 Thr Pro Thr Gly Asn Val Gly Phe Gly Tyr Thr Asn Glu Thr Glu Ser
 2277 1460 1465 1470
 2279 Lys Arg Thr Val Asn Gln Gln Ala Gly Ile Lys Ala Asn Lys Ile Thr
 2280 1475 1480 1485
 2282 Gly Gln Thr His Asp Leu Asn Leu Glu Gly Gly Tyr Leu Val Ser Asn
 2283 1490 1495 1500
 2285 Asp Lys Asp Asn Gln Leu Lys Val Thr Gly Asp Val Thr Thr Lys Ala
 2286 1505 1510 1515 1520
 2288 Leu His Asp Gln His Asp Lys Asp Gly Gly Thr Phe Gly Leu Ser Val
 2289 1525 1530 1535
 2291 Gly Ile Ser Glu Arg Gly Thr Thr Ala Phe Asn Val Arg Gly Gly Arg
 2292 1540 1545 1550
 2294 Ala Glu Gln Lys His Tyr Asn Ala Thr Gln Lys Ser Thr Leu Ser Gly
 2295 1555 1560 1565
 2297 Val Asp Thr Ser Gln Ala Asn Val Ser Gly Gln Val Asn Thr Asp Leu
 2298 1570 1575 1580
 2300 Thr Lys Ala Lys Ala Val Thr Arg Asp Asp Thr Tyr Ala Ser Thr Gln
 2301 1585 1590 1595 1600
 2303 Phe Ser Phe Glu Val Ala Asp Ile Val Glu Leu Gly Gln Arg Ala Lys
 2304 1605 1610 1615
 2306 Asn Lys Leu Ser Ala Pro Asn Asn Asp Thr Asp Met Ala Ser Gly Ser
 2307 1620 1625 1630
 2309 Thr Leu Arg Ser Arg Ser Thr Thr Glu Glu Ala Asp Val Pro Thr Thr
 2310 1635 1640 1645
 2312 Arg Ser Arg Val Thr Asp Glu Ala Asp Ser Val Ser Val Lys Asn Pro
 2313 1650 1655 1660
 2315 Ile Tyr Glu Ser Ala Asp Ala Val Val Pro Thr Pro Arg Ser Arg Asn
 2316 1665 1670 1675 1680
 2318 Val Asp Ser Thr Asp Leu Val Asp Asn Pro Leu Tyr Ala Ser Ala Thr
 2319 1685 1690 1695
 2321 Thr Lys Ala Asn Ile His Asp Tyr Glu Glu Ile Pro Ala Val Tyr Ser
 2322 1700 1705 1710
 2324 Lys Val Gly Asp Asn Asn Ala Asp Leu Val Arg His Lys Thr Ala Thr
 2325 1715 1720 1725
 2327 Ser Asp Glu His Leu Tyr Ala Glu Ile Asn Glu Pro Thr Tyr Ser Arg
 2328 1730 1735 1740
 2331 Val Gly Asp Lys Asn Ala Asp Met Arg Arg His Asn Ala Ala Gly Thr
 2332 1745 1750 1755 1760
 2334 Thr Asp Tyr Ala Asp Val Val Gln Ala His Thr Arg Lys Ala Asp Asp

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2335	1765	1770	1775	
2337	Pro Leu Pro Ala Leu Pro Asn Gln Gly Lys Ala Arg Thr Val Asn Asp			
2338	1780	1785	1790	
2340	Gly Ser Glu His Ile Tyr Thr Asp Ile Ser Asp Val Gly Thr Gln Thr			
2341	1795	1800	1805	
2343	Lys Ala Ile Asp Ser Thr Tyr Ala Thr Val Gly Met Pro Lys Ala Asn			
2344	1810	1815	1820	
2346	Ala Val Asn Leu Ile Gly Gln Asn Gly Leu Gly Ser Ile Tyr His Ser			
2347	1825	1830	1835	1840
2349	Pro Asp Ser Ala Tyr Lys Thr Trp Gln Leu Leu Asp Gln Phe Ala Asn			
2350	1845	1850	1855	
2352	Lys Gly Gly Asp Ala Val Phe Leu Arg Pro Ala Thr Glu Met Lys Cys			
2353	1860	1865	1870	
2356	Ala Gly Ala Pro Leu Lys Tyr Thr Phe Ile Val Arg Asp Tyr Leu Leu			
2357	1875	1880	1885	
2359	Arg Arg His Thr Leu Asp Lys Ser Arg Leu Phe Tyr Asn Ala His Asn			
2360	1890	1895	1900	
2362	Lys Thr Leu Phe Ser Val Pro Ile Val Asp Ala Lys Val Lys Met Leu			
2363	1905	1910	1915	1920
2365	Phe Ala Glu Lys Asn Ile Gln Val Asn Tyr Asp Arg Ser Leu Thr Ala			
2366	1925	1930	1935	
2368	Ile Asp Leu Ser Lys Arg Ile Ala Thr Phe Asn Ser Pro Glu Gly Val			
2369	1940	1945	1950	
2371	Val Glu Val Pro Tyr Asp Phe Ile Asn Val Val Pro Pro Met Arg Ala			
2372	1955	1960	1965	
2374	Pro Asp Ala Val Arg Gln Ser Ala Leu Ala Trp Gln Glu Gly Lys Trp			
2375	1970	1975	1980	
2377	Ala Asn Asp Gly Trp Val Glu Val Glu Lys His Thr Leu Arg His Arg			
2378	1985	1990	1995	2000
2380	Arg Tyr Ala Asn Val Phe Ala Val Gly Asp Val Ala Gly Val Pro Lys			
2381	2005	2010	2015	
2383	Gly Lys Thr Ala Ala Ser Val Lys Trp Gln Val Pro Val Ala Val Ala			
2384	2020	2025	2030	
2386	His Leu Leu Ala Glu Leu Glu Gly Lys Pro Cys Asp Glu Ile Tyr Asn			
2387	2035	2040	2045	
2389	Gly Tyr Thr Ser Cys Pro Leu Ile Thr Gln Leu Gly Lys Gly Met Leu			
2390	2050	2055	2060	
2392	Val Glu Phe Asp Tyr Asn Asn His Leu Thr Pro Ser Phe Pro Gly Val			
2393	2065	2070	2075	2080
2395	Ile Ala Pro Leu Glu Glu Leu Trp Ala Thr Trp Ala Ile Lys Thr Leu			
2396	2085	2090	2095	
2398	Gly Leu Lys Pro Thr Tyr Leu Gly Met Leu Arg Gly Leu Ala			
2399	2100	2105	2110	

VERIFICATION SUMMARY
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Input Set : A:\6227.txt
Output Set: N:\CRF3\10222001\I545199D.raw

L:127 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:2268 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:16
L:3839 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:3840 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
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L:3844 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
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L:5415 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:5426 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:5427 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:5442 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:5450 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:5524 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36
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L:5689 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37
L:5726 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38
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L:9357 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72
L:11241 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90
L:11243 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90
L:11976 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:11977 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102
L:12304 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:103